



[4910-13-P]

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 39**

**[Docket No. FAA-2013-0542; Directorate Identifier 2011-NM-162-AD; Amendment 39-17785 AD 2014-05-12]**

**RIN 2120-AA64**

**Airworthiness Directives; The Boeing Company Airplanes**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule.

**SUMMARY:** We are superseding Airworthiness Directive (AD) 2010-15-08 for all The Boeing Company Model 737-100, -200, -200C, -300, -400, and -500 series airplanes. AD 2010-15-08 required repetitive inspections for discrepancies of each carriage spindle of the outboard mid-flaps; repetitive gap checks of the inboard and outboard carriages of the outboard mid-flaps to detect fractured carriage spindles; measuring to ensure that any new or serviceable carriage spindle meets minimum allowable diameter measurements taken at three locations; repetitive inspections, measurements, and overhaul of the carriage spindles; replacement of any carriage spindle when it has reached its maximum life limit; and corrective actions if necessary. This new AD requires reducing the life limit of the carriages, reducing the repetitive interval for certain inspections and gap checks for certain carriages. This new AD also adds an option, for certain replacements, of doing an inspection, and related investigative and corrective actions if necessary. This AD was prompted by a report of failure of both flap carriages. We are issuing this AD to detect and correct cracked, corroded, or fractured carriage spindles, which could lead to severe flap asymmetry, and could result in reduced control or loss of controllability of the airplane.

**DATES:** This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of certain other publications listed in this AD as of August 31, 2010 (75 FR 43803, July 27, 2010).

**ADDRESSES:** For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, Washington 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; Internet <https://www.myboeingfleet.com>. You may view this referenced service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221.

#### **Examining the AD Docket**

You may examine the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2014-05-12 or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, the regulatory evaluation, any comments received, and other information. The address for the Docket Office (phone: 800-647-5527) is Docket Management Facility, U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

**FOR FURTHER INFORMATION CONTACT:** Nancy Marsh, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office (ACO), 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: (425) 917-6440; fax: (425)917-6590; email: [nancy.marsh@faa.gov](mailto:nancy.marsh@faa.gov).

**SUPPLEMENTARY INFORMATION:**

**Discussion**

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to supersede AD 2010-15-08, Amendment 39-16374 (75 FR 43803, July 27, 2010). AD 2010-15-08 applied to all The Boeing Company Model 737-100, -200, -200C, -300, -400, and -500 series airplanes. The NPRM published in the Federal Register on July 1, 2013 (78 FR 39193). The NPRM was prompted by a report of failure of both flap carriages. The NPRM proposed to continue to require repetitive inspections for discrepancies of each carriage spindle of the outboard mid-flaps; repetitive gap checks of the inboard and outboard carriages of the outboard mid-flaps to detect fractured carriage spindles; measuring to ensure that any new or serviceable carriage spindle meets minimum allowable diameter measurements taken at three locations; repetitive inspections, measurements, and overhaul of the carriage spindles; replacement of any carriage spindle when it has reached its maximum life limit; and corrective actions if necessary. The NPRM also proposed to require reducing the life limit of the carriages, reducing the repetitive interval for certain inspections and gap checks for certain carriages. The NPRM also proposed to add an option, for certain replacements, of doing an inspection, and related investigative and corrective actions if necessary. We are issuing this AD to detect and correct cracked, corroded, or fractured carriage spindles, which could lead to severe flap asymmetry, and could result in reduced control or loss of controllability of the airplane.

## **Comments**

We gave the public the opportunity to participate in developing this AD. The following presents the comments received on the proposal (78 FR 39193, July 1, 2013) and the FAA's response to each comment.

### **Request to Revise Note**

Boeing requested we revise note 1 to paragraph (m) of the NPRM (78 FR 39193, July 1, 2013) to read, "... Boeing (737) Standard Overhaul Practices Manual (SOPM), Revision 25 or later." Boeing stated that as its production standard changes, the SOPM is revised each time the SOPM is updated. Boeing stated that a global alternative method of compliance (AMOC) is required each time the SOPM is revised and this generates AMOC activity that does not enhance fleet safety.

We disagree to revise Note 1 to paragraph (m) of this final rule because the text in Note 1 is informational guidance and does not relieve the requirement in paragraph (m) to obtain approval for the method used to apply plating, regardless of what revision of the SOPM is specified. We have not changed this final rule in this regard.

### **Request to Revise Requirement for Plating**

Boeing requested the following requirement in paragraph (m)(3) of the NPRM (78 FR 39193, July 1, 2013) be removed, "The carriage must not be plated using any high velocity oxygen fuel (HVOF) thermal spray process." Boeing stated AD 2011-04-10, Amendment 39-16609 (76 FR 9498, February 18, 2011), and AD 2012-13-07, Amendment 39-17109 (77 FR 39153, July 2, 2012), required diligent inspection of HVOF coated carriages. Boeing stated that inspections to date have only found minor corrosion, well in advance of a potential unsafe condition. Boeing stated requiring carriages to be converted to nickel [plating] does not enhance fleet safety.

We disagree to remove the requested phrase. The restriction against future application of HVOF plating of the flap carriages was coordinated and agreed to by The Boeing Company prior to issuance of the NPRM (78 FR 39193, July 1, 2013). Service

experience has shown that the HVOF coating has insufficient reliability, therefore the restriction is necessary. We have not changed this final rule in this regard.

### **Clarification Regarding the Installation of Winglets**

Aviation Partners Boeing (APB) stated the installation of winglets per Supplemental Type Certificate (STC) ST01219SE ([http://rgl.faa.gov/Regulatory and Guidance Library/rgstc.nsf/0/BE866B732F6CF31086257B9700692796?OpenDocument&Highlight=st01219se](http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgstc.nsf/0/BE866B732F6CF31086257B9700692796?OpenDocument&Highlight=st01219se)) does not affect the accomplishment of the manufacturer's service instructions.

We agree with APB's statement that the installation of winglets as specified in STC ST01219SE ([http://rgl.faa.gov/Regulatory and Guidance Library/rgstc.nsf/0/BE866B732F6CF31086257B9700692796?OpenDocument&Highlight=st01219se](http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgstc.nsf/0/BE866B732F6CF31086257B9700692796?OpenDocument&Highlight=st01219se)) does not affect accomplishment of the requirements of this AD, and for airplanes on which STC ST01219SE is installed, a "change in product" (AMOC) approval request is not necessary to comply with the requirements of section 39.17 of the Federal Aviation Regulations (14 CFR 39.17). We have redesignated paragraph (c) of the NPRM (78 FR 39193, July 1, 2013) as (c)(1) and added this provision in new paragraph (c)(2) of this final rule.

### **Conclusion**

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting this AD with the changes described previously and minor editorial changes. We have determined that these minor changes:

- Are consistent with the intent that was proposed in the NPRM (78 FR 39193, July 1, 2013) for correcting the unsafe condition; and

- Do not add any additional burden upon the public than was already proposed in the NPRM (78 FR 39193, July 1, 2013).

We also determined that these changes will not increase the economic burden on any operator or increase the scope of this AD.

### Costs of Compliance

We estimate that this AD affects 652 airplanes of U.S. registry.

We estimate the following costs to comply with this AD:

#### Estimated costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Inspections [actions retained from existing AD 2010-15-08, Amendment 39-16374 (75 FR 43803, July 27, 2010)]	12 work-hours X \$85 per hour = \$1,020	\$0	\$1,020 per inspection cycle	\$665,040 per inspection cycle
Inspections and measurements [actions retained from existing AD 2010-15-08, Amendment 39-16374 (75 FR 43803, July 27, 2010)]	2 work-hours X \$85 per hour = \$170	\$0	\$170 per inspection and measurement cycle	\$110,840 per inspection and measurement cycle
Overhauls [actions retained from existing AD 2010-15-08, Amendment 39-16374 (75 FR 43803, July 27, 2010)]	16 work-hours X \$85 per hour = \$1,360	\$28,000 <sup>1</sup>	\$29,360 per overhaul cycle	\$19,142,720 per overhaul cycle
Replacements [actions retained from existing AD 2010-15-08, Amendment 39-16374 (75 FR 43803, July 27, 2010)]	16 work-hours X \$85 per hour = \$1,360	\$60,000 <sup>2</sup>	\$61,360 per replacement cycle	\$40,006,720 per replacement cycle

<sup>1</sup> \$7,000 per spindle; 4 spindles per airplane.

<sup>2</sup> \$15,000 per spindle; 4 spindles per airplane.

The new requirements of this AD add no additional economic burden.

### **Authority for this Rulemaking**

Title 49 of the United States Code specifies the FAA’s authority to issue rules on aviation safety. Subtitle I, Section 106, describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the Agency’s authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701, “General requirements.” Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

### **Regulatory Findings**

We have determined that this AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Is not a “significant rule” under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska, and
- (4) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

### **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

## **Adoption of the Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

### **PART 39 - AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

#### **§ 39.13 [Amended]**

2. The FAA amends § 39.13 by removing Airworthiness Directive (AD) 2010-15-08, Amendment 39-16374 (75 FR 43803, July 27, 2010), and adding the following new AD:

**2014-05-12 The Boeing Company:** Amendment 39-17785 ; Docket No. FAA-2013-0542; Directorate Identifier 2011-NM-162-AD.

#### **(a) Effective Date**

This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

#### **(b) Affected ADs**

This AD supersedes AD 2010-15-08, Amendment 39-16374 (75 FR 43803, July 27, 2010).

#### **(c) Applicability**

(1) This AD applies to all The Boeing Company Model 737-100, -200, -200C, -300, -400, and -500 series airplanes, certificated in any category.

(2) Installation of Supplemental Type Certificate (STC) ST01219SE ([http://rgl.faa.gov/Regulatory\\_and\\_Guidance\\_Library/rgstc.nsf/0/BE866B732F6CF31086257B9700692796?OpenDocument&Highlight=st01219se](http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgstc.nsf/0/BE866B732F6CF31086257B9700692796?OpenDocument&Highlight=st01219se)) does not affect the ability to accomplish the actions required by this AD. Therefore, for airplanes on which STC ST01219SE is installed, a “change in product” alternative method of compliance

(AMOC) approval request is not necessary to comply with the requirements of 14 CFR 39.17.

**(d) Subject**

Air Transport Association (ATA) of America Code 57: Wings.

**(e) Unsafe Condition**

This AD was prompted by a report of failure of both flap carriages. We are issuing this AD to detect and correct cracked, corroded, or fractured carriage spindles, which could lead to severe flap asymmetry, and could result in reduced control or loss of controllability of the airplane.

**(f) Compliance**

Comply with this AD within the compliance times specified, unless already done.

**(g) Compliance Times for Paragraphs (h) and (j) of this AD**

This paragraph restates the requirements of paragraph (g) of AD 2010-15-08, Amendment 39-16374 (75 FR 43803, July 27, 2010), with revised service information that shortens the compliance times for certain inspections. The tables in paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 737-57A1277, Revision 1, dated November 25, 2003; and Boeing Service Bulletin 737-57A1277, Revision 3, dated May 16, 2012; specify the compliance times for paragraphs (g) through (k) of this AD. For carriage spindles that have accumulated the number of flight cycles or years in service specified in the “Threshold” column of the tables in paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 737-57A1277, Revision 1, dated November 25, 2003, accomplish the gap check, nondestructive test (NDT) inspection, and general visual inspection specified in paragraphs (h) and (j) of this AD within the corresponding interval after December 4, 2003 (the effective date AD 2003-24-08, Amendment 39-13337 (68 FR 67027, December 1, 2003)), as specified in the “Interval” column of the tables in paragraph 1.E., “Compliance,” of Boeing Alert

Service Bulletin 737-57A1277, Revision 1, dated November 25, 2003, except as specified in paragraph (g)(1) or (g)(2) of this AD. Repeat the gap check, NDT, and general visual inspections at the intervals specified in the “Interval” column of the tables in paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 737-57A1277, Revision 1, dated November 25, 2003, except as specified in paragraph (g)(1) and (g)(2) of this AD. As of the effective date of this AD, accomplish the gap check, NDT inspection, and general visual inspections specified in paragraphs (h) and (j) of this AD within the corresponding interval as specified in the “Interval” column of the tables in paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 737-57A1277, Revision 1, dated November 25, 2003, and thereafter at the intervals specified in Boeing Service Bulletin 737-57A1277, Revision 3, dated May 16, 2012, except as specified in paragraphs (g)(1) and (g)(2) of this AD. Repeat the gap check, NDT, and general visual inspections thereafter at the intervals specified in the “Interval” column of the tables in paragraph 1.E., “Compliance,” of Boeing Service Bulletin 737-57A1277, Revision 3, dated May 16, 2012, except as specified in paragraphs (g)(1) and (g)(2) of this AD.

(1) The gap check does not have to be done at the same time as an NDT inspection; after doing an NDT inspection, the interval for doing the next gap check may be measured from the NDT inspection.

(2) As carriage spindles gain flight cycles or years in service and move from one category in the “Threshold” column to another, they are subject to the repetitive inspection intervals corresponding to the new threshold category.

**(h) Retained Work Package 2: Gap Check**

This paragraph restates the requirements of paragraph (h) of AD 2010-15-08, Amendment 39-16374 (75 FR 43803, July 27, 2010), with revised service information. Perform a gap check of the inboard and outboard carriage of the left and right outboard

mid-flaps to determine if there is a positive indication of a severed carriage spindle, in accordance with Work Package 2 of paragraph 3.B., “Work Instructions,” of Boeing Alert Service Bulletin 737-57A1277, Revision 1, dated November 25, 2003; or Boeing Service Bulletin 737-57A1277, Revision 3, dated May 16, 2012. As of the effective date of this AD, only Boeing Service Bulletin 737-57A1277, Revision 3, dated May 16, 2012, may be used to perform the actions specified in this paragraph.

**(i) Retained Work Package 2: Corrective Actions with New Optional Actions and Exception**

This paragraph restates the requirements of paragraph (i) of AD 2010-15-08, Amendment 39-16374 (75 FR 43803, July 27, 2010), with revised service information and new optional actions and exception. If there is a positive indication of a severed carriage spindle during the gap check required by paragraph (h) of this AD, before further flight, do the actions specified in paragraph (i)(1) or (i)(2) of this AD, except for carriage spindles on which an ultrasonic inspection has been done in accordance with the “Work Instructions” of Boeing Service Bulletin 737-57A1277, Revision 3, dated May 16, 2012; and the spindle has been confirmed not to be severed, no further actions are required by this paragraph for that carriage spindle.

(1) Remove the carriage spindle and install a new or serviceable carriage spindle, in accordance with the “Work Instructions” of any service bulletin specified in paragraph (i)(1)(i), (i)(1)(ii), (i)(1)(iii), or (i)(1)(iv) of this AD. As of the effective date of this AD, only Boeing Service Bulletin 737-57A1277, Revision 3, dated May 16, 2012, may be used to perform the actions specified in this paragraph.

(i) Boeing Alert Service Bulletin 737-57A1277, Revision 1, dated November 25, 2003.

(ii) Boeing Service Bulletin 737-57A1277, Revision 3, dated May 16, 2012.

(iii) Boeing Alert Service Bulletin 737-57A1218, Revision 5, dated February 9, 2009.

(iv) Boeing Alert Service Bulletin 737-57A1218, Revision 6, dated June 9, 2011.

(2) Do a detailed inspection of the spindle to determine if there is corrosion, cracking, or a severed spindle, and, before further flight, do all related investigative and corrective actions, in accordance with the “Work Instructions” of Boeing Alert Service Bulletin 737-57A1277, Revision 1, dated November 25, 2003; or Boeing Service Bulletin 737-57A1277, Revision 3, dated May 16, 2012. If, during the detailed inspection described in paragraph 4.b. of Work Package 2 of Boeing Alert Service Bulletin 737-57A1277, Revision 1, dated November 25, 2003; or Boeing Alert Service Bulletin 737-57A1277, Revision 3, dated May 16, 2012; a carriage spindle is found not to be severed, and no corrosion and no cracking is present, it can be reinstalled on the outboard mid-flap, in accordance with any service bulletin specified in paragraph (i)(2)(i), (i)(2)(ii), (i)(2)(iii), or (i)(2)(iv) of this AD. As of the effective date of this AD, only Boeing Service Bulletin 737-57A1277, Revision 3, dated May 16, 2012, may be used to perform the actions specified in this paragraph.

(i) Boeing Alert Service Bulletin 737-57A1277, Revision 1, dated November 25, 2003.

(ii) Boeing Service Bulletin 737-57A1277, Revision 3, dated May 16, 2012.

(iii) Boeing Alert Service Bulletin 737-57A1218, Revision 5, dated February 9, 2009.

(iv) Boeing Alert Service Bulletin 737-57A1218, Revision 6, dated June 9, 2011.

**(j) Retained Work Package 1: NDT (Ultrasonic) and General Visual Inspections**

This paragraph restates the requirements of paragraph (j) of AD 2010-15-08, Amendment 39-16374 (75 FR 43803, July 27, 2010), with revised service information. Perform an NDT (ultrasonic) inspection and general visual inspection for each carriage spindle of the left and right outboard mid-flaps to detect cracks,

corrosion, or severed carriage spindles, in accordance with “Work Package 1” of the “Work Instructions” of Boeing Alert Service Bulletin 737-57A1277, Revision 1, dated November 25, 2003; or Boeing Service Bulletin 737-57A1277, Revision 3, dated May 16, 2012. As of the effective date of this AD, only Boeing Service Bulletin 737-57A1277, Revision 3, dated May 16, 2012, may be used to perform the actions specified in this paragraph.

**(k) Retained Work Package 1: Corrective Actions and New Optional Action**

This paragraph restates the requirements of paragraph (k) of AD 2010-15-08, Amendment 39-16374 (75 FR 43803, July 27, 2010), with revised service information and new optional action. If any corroded, cracked, or severed carriage spindle is found during any inspection required by paragraph (j) of this AD: Before further flight, do the actions specified in paragraph (k)(1) or (k)(2) of this AD.

(1) Remove the carriage spindle and install a new or serviceable carriage spindle, in accordance with any service bulletin identified in paragraph (k)(1)(i), (k)(1)(ii), (k)(1)(iii), or (k)(1)(iv) of this AD. As of the effective date of this AD, only Boeing Service Bulletin 737-57A1277, Revision 3, dated May 16, 2012, may be used to perform the actions specified in this paragraph.

(i) Boeing Alert Service Bulletin 737-57A1277, Revision 1, dated November 25, 2003.

(ii) Boeing Service Bulletin 737-57A1277, Revision 3, dated May 16, 2012.

(iii) Boeing Alert Service Bulletin 737-57A1218, Revision 5, dated February 9, 2009.

(iv) Boeing Alert Service Bulletin 737-57A1218, Revision 6, dated June 9, 2011.

(2) Do a detailed inspection of the spindle to determine if there is corrosion, cracking, or a severed spindle, in accordance with the “Work Instructions” of Boeing

Alert Service Bulletin 737-57A1277, Revision 1, dated November 25, 2003; or Boeing Service Bulletin 737-57A1277, Revision 3, dated May 16, 2012. If any corrosion, cracking, or a severed spindle is found, before further flight, install a new or serviceable carriage spindle, in accordance with any service bulletin identified in paragraph (k)(1)(i), (k)(1)(ii), (k)(1)(iii), or (k)(1)(iv) of this AD. As of the effective date of this AD, only Boeing Service Bulletin 737-57A1277, Revision 3, dated May 16, 2012, may be used to perform the actions specified in this paragraph.

**(l) Retained Parts Installation Limitation**

This paragraph restates the requirements of paragraph (l) of AD 2010-15-08, Amendment 39-16374 (75 FR 43803, July 27, 2010). Except as provided by paragraph (i) of this AD: As of December 4, 2003 (the effective date AD 2003-24-08, Amendment 39-13337 (68 FR 67027, December 1, 2003)), no person may install on any airplane a carriage spindle that has been removed as required by paragraph (i) or (k) of this AD, unless it has been overhauled in accordance with the “Work Instructions” of the applicable service bulletin identified in paragraph (l)(1), (l)(2), (l)(3), or (l)(4) of this AD. As of the effective date of this AD, only Boeing Service Bulletin 737-57A1277, Revision 3, dated May 16, 2012; or Boeing Alert Service Bulletin 737-57A1218, Revision 6, dated June 9, 2011; may be used to perform the actions specified in this paragraph. To be eligible for installation under this paragraph, the carriage spindle must have been overhauled in accordance with the requirements of paragraph (m) of this AD.

(1) Boeing Alert Service Bulletin 737-57A1277, Revision 1, dated November 25, 2003.

(2) Boeing Service Bulletin 737-57A1277, Revision 3, dated May 16, 2012.

(3) Boeing Alert Service Bulletin 737-57A1218, Revision 5, dated February 9, 2009.

(4) Boeing Alert Service Bulletin 737-57A1218, Revision 6, dated June 9, 2011.

**(m) Retained Electrodeposited Nickel Plating with New Plating Restrictions**

This paragraph restates the requirements of paragraph (m) of AD 2010-15-08, Amendment 39-16374 (75 FR 43803, July 27, 2010) with revised plating application procedures. As of the effective date of this AD, during accomplishment of any overhaul specified in paragraph (l) or (o) of this AD, follow the requirements specified in paragraphs (m)(1), (m)(2), and (m)(3) of this AD during application of the plating to the carriage spindle, in accordance with a method approved by the Manager, Seattle, Aircraft Certification Office (ACO), FAA. For a repair method to be approved, the repair must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

(1) The maximum deposition rate of the nickel plating in any one plating/baking cycle must not exceed 0.002-inch-per-hour.

(2) Begin the hydrogen embrittlement relief bake within 10 hours after application of the nickel plating, or less than 24 hours after the current was first applied to the part, whichever is first.

(3) The carriage must not be plated using any high velocity oxygen fuel (HVOF) thermal spray process.

Note 1 to paragraph (m) of this AD: Guidance on the application of nickel plating can be found in Chapter 20-42-09, Electrodeposited Nickel Plating, of the Boeing (737) Standard Overhaul Practices Manual, Revision 25, dated July 1, 2009.

**(n) Retained Exception to Reporting Recommendations**

This paragraph restates the provisions of paragraph (n) of AD 2010-15-08, Amendment 39-16374 (75 FR 43803, July 27, 2010), with revised service information. Although Boeing Alert Service Bulletin 737-57A1277, Revision 1, dated November 25, 2003; and Boeing Service Bulletin 737-57A1277, Revision 3, dated May 16, 2012; recommend that operators report inspection findings to the manufacturer, this AD does not require reporting.

**(o) Retained Inspections, Measurements, and Overhauls of the Carriage Spindle with Clarification of Overhaul Restrictions**

This paragraph restates the requirements of paragraph (o) of AD 2010-15-08, Amendment 39-16374 (75 FR 43803, July 27, 2010) with clarification of overhaul restrictions. At the applicable times specified in paragraphs (o)(1) and (o)(2) of this AD: Do the detailed inspection for corrosion, pitting, and cracking of the carriage spindle; magnetic particle inspection for cracking of the carriage spindle; measurements of the spindle to determine if it meets the allowable minimum diameter; overhauls of the carriage spindle; and applicable corrective actions; in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 737-57A1218, Revision 5, dated February 9, 2009; or Boeing Alert Service Bulletin 737-57A1218, Revision 6, dated June 9, 2011. As of the effective date of this AD, only Boeing Alert Service Bulletin 737-57A1218, Revision 6, dated June 9, 2011, may be used to perform the actions specified in this paragraph. The applicable corrective actions must be done before further flight. Repeat these actions thereafter at intervals not to exceed every 12,000 flight cycles on the carriage spindle or every 8 years since first installation of the carriage spindle on the airplane, whichever comes first. As of the effective date of this AD: For any overhaul required by this paragraph, the carriage spindle must be overhauled in accordance with the requirements of paragraph (m) of this AD.

(1) For Model 737-100, -200, -200C series airplanes: At the later of the times specified in paragraphs (o)(1)(i) and (o)(1)(ii) of this AD.

(i) Before the accumulation of 12,000 total flight cycles on the carriage spindle since new or overhauled, or within 8 years after the installation of the new or overhauled part, whichever comes first.

(ii) Within 1 year after August 31, 2010 (the effective date of AD 2010-15-08, Amendment 39-16374 (75 FR 43803, July 27, 2010)).

(2) For Model -300, -400, and -500 series airplanes: At the later of the times specified in paragraphs (o)(2)(i) and (o)(2)(ii) of this AD.

(i) Before the accumulation of 12,000 total flight cycles on the carriage spindle since new or overhauled, or within 8 years after the installation of the new or overhauled part, whichever comes first.

(ii) Within 2 years after August 31, 2010 (the effective date of AD 2010-15-08, Amendment 39-16374 (75 FR 43803, July 27, 2010)).

**(p) Retained Carriage Spindle Replacement for Model 737-100, -200, and -200C Series Airplanes**

This paragraph restates the requirements of paragraph (p) of AD 2010-15-08, Amendment 39-16374 (75 FR 43803, July 27, 2010), with revised service information and a shortened compliance time. For Model 737-100, -200, -200C series airplanes: Replace the carriage spindle with a new or documented (for which the service life, in total flight cycles, is known) carriage spindle, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 737-57A1218, Revision 5, dated February 9, 2009; or Boeing Alert Service Bulletin 737-57A1218, Revision 6, dated June 9, 2011; at the earlier of the times specified in paragraphs (p)(1) and (p)(2) of this AD, except as required by paragraph (r) of this AD. As of the effective date of this AD, only Boeing Alert Service Bulletin 737-57A1218, Revision 6, dated June 9, 2011, may be used to perform the replacement. Overhauling the carriage spindles does not zero-out the flight cycles. Total flight cycles accumulate since new.

(1) At the later of the times specified in paragraphs (p)(1)(i) and (p)(1)(ii) of this AD.

(i) Before the accumulation of 48,000 total flight cycles on the new or overhauled carriage.

(ii) Within 3 years or 7,500 flight cycles after August 31, 2010 (the effective date of AD 2010-15-08, Amendment 39-16374 (75 FR 43803, July 27, 2010)), whichever occurs first.

(2) Before the accumulation of 40,000 total flight cycles on the new or overhauled carriage or 6 months after the effective date of this AD, whichever occurs later.

**(q) Retained Carriage Spindle Replacement for Model 737-300, -400, and -500 Series Airplanes**

This paragraph restates the requirements of paragraph (q) of AD 2010-15-08, Amendment 39-16374 (75 FR 43803, July 27, 2010), with revised service information and a shortened compliance time. For Model 737-300, -400, and -500 series airplanes: Replace the carriage spindle with a new or documented (for which the service life, in flight cycles, is known) carriage spindle, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 737-57A1218, Revision 5, dated February 9, 2009; or Boeing Alert Service Bulletin 737-57A1218, Revision 6, dated June 9, 2011; at the later of the times specified in paragraphs (q)(1) and (q)(2) of this AD, except as required by paragraph (r) of this AD. As of the effective date of this AD, only Boeing Alert Service Bulletin 737-57A1218, Revision 6, dated June 9, 2011, may be used to perform the replacement required by this paragraph. Overhauling the carriage spindles does not zero-out the flight cycles. Total flight cycles accumulate since new.

(1) Before the accumulation of 40,000 total flight cycles on the new or overhauled carriage.

(2) Within 6 years or 15,000 flight cycles after August 31, 2010 (the effective date of AD 2010-15-08, Amendment 39-16374 (75 FR 43803, July 27, 2010)), whichever occurs first.

**(r) Retained Carriage Spindle Replacement for Airplanes with an Undocumented Carriage**

This paragraph restates the requirements of paragraph (r) of AD 2010-15-08, Amendment 39-16374 (75 FR 43803, July 27, 2010). For airplanes with an undocumented carriage: Do the applicable actions specified in paragraph (p) or (q) of this AD at the applicable time specified in paragraph (r)(1) or (r)(2) of this AD.

(1) For Model 737-100, -200, -200C series airplanes: Do the actions specified in paragraph (p) of this AD at the time specified in paragraph (p)(1)(ii) of this AD.

(2) For Model -300, -400, and -500 series airplanes: Do the actions specified in paragraph (q) of this AD at the time specified in paragraph (q)(2) of this AD.

**(s) Retained Repetitive Replacements of Carriage Spindle**

This paragraph restates the requirements of paragraph (s) of AD 2010-15-08, Amendment 39-16374 (75 FR 43803, July 27, 2010), with revised compliance times.

(1) For airplanes on which the actions required by paragraph (p) or (q) of this AD, as applicable, have been done as of the effective date of this AD: Repeat the replacement of the carriage spindle specified by paragraph (p) or (q) of this AD, as applicable, one time at the later of the times specified in paragraphs (s)(1)(i) and (s)(1)(ii) of this AD, and thereafter at intervals not to exceed 40,000 total flight cycles on the new or overhauled carriage spindle.

(i) Before the accumulation of 40,000 total flight cycles on the new or overhauled carriage.

(ii) Within 6 years or 15,000 flight cycles after August 31, 2010 (the effective date of AD 2010-15-08, Amendment 39-16374 (75 FR 43803, July 27, 2010)), whichever occurs first.

(2) For airplanes on which the actions required by paragraph (p) or (q) of this AD, as applicable, have not been done as of the effective date of this AD: Repeat the replacement of the carriage spindle specified by paragraph (p) or (q) of this AD, as applicable, thereafter at intervals not to exceed 40,000 total flight cycles on the new or overhauled carriage spindle.

**(t) Exception to Compliance Time**

Where Boeing Service Bulletin 737-57A1277, Revision 3, dated May 16, 2012, and Boeing Alert Service Bulletin 737-57A1218, Revision 6, dated June 9, 2011, specify a compliance time after the dates of those service bulletins, this AD requires compliance within the specified compliance time after the effective date of this AD.

**(u) Credit for Previous Actions**

This paragraph provides credit for actions required by paragraphs (g) through (s) of this AD, if those actions were performed before the effective date of this AD using Boeing Alert Service Bulletin 737-57A1277, Revision 2, dated June 9, 2011, which is not incorporated by reference in this AD.

**(v) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, Seattle Aircraft Certification Office (ACO), FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the ACO, send it to the attention of the person identified in paragraph (w) of this AD. Information may be emailed to:

[9-ANM-Seattle-ACO-AMOC-Requests@faa.gov](mailto:9-ANM-Seattle-ACO-AMOC-Requests@faa.gov).

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(3) An AMOC that provides an acceptable level of safety may be used for any repair required by this AD if it is approved by the Boeing Commercial Airplanes Organization Designation Authorization (ODA) that has been authorized by the Manager, ACO, to make those findings. For a repair method to be approved, the repair must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

(4) AMOCs previously approved in accordance with AD 2003-24-08, Amendment 39-13377 (68 FR 67027, December 1, 2003), or AD 2010-15-08, Amendment 39-16374 (75 FR 43803, July 27, 2010), are approved as AMOCs for individual repairs are acceptable for compliance with the corresponding provisions of this AD. All other existing AMOCs are not acceptable.

**(w) Related Information**

(1) For more information about this AD, contact Nancy Marsh, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office (ACO), 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: (425) 917-6440; fax: (425) 917-6590; email: [nancy.marsh@faa.gov](mailto:nancy.marsh@faa.gov).

(2) Service information identified in this AD that is not incorporated by reference may be obtained at the addresses specified in paragraphs (x)(5) and (x)(6) of this AD.

**(x) Material Incorporated by Reference**

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(3) The following service information was approved for IBR on [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(i) Boeing Alert Service Bulletin 737-57A1218, Revision 6, dated June 9, 2011.

(ii) Boeing Alert Service Bulletin 737-57A1277, Revision 3, dated May 16, 2012.

(4) The following service information was approved for IBR on August 31, 2010 (75 FR 43803, July 27, 2010).

(i) Boeing Alert Service Bulletin 737-57A1218, Revision 5, dated February 9, 2009.

(ii) Boeing Alert Service Bulletin 737-57A1277, Revision 1, dated November 25, 2003.

(5) For Boeing service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, Washington 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; Internet <https://www.myboeingfleet.com>.

(6) You may view this service information at FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, Washington. For information on the availability of this material at the FAA, call 425-227-1221.

(7) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to:

<http://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued in Renton, Washington, on February 18, 2014.

Ross Landes,  
Acting Manager,  
Transport Airplane Directorate,  
Aircraft Certification Service.

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